CLAIMS

1. Apparatus for providing streaming data from a server to multiple clients comprising, a gateway located between said server and said clients, wherein said gateway includes:

(a) means for obtaining streaming data from said server upon receipt of a first request for a stream from any of said clients, and

(b) means for providing said stream from said gateway to second and subsequent clients requesting said stream.

2. Apparatus as claimed in claim 1 wherein said gateway comprises means for maintaining a list of all streams currently being supplied to clients of said gateway, and means for comparing a request from a client for a stream with said list, said stream being obtained from said server if the requested stream is not on said list and said stream being supplied to the client from the gateway if the requested stream is on said list.

3. Apparatus as claimed in claim 2 wherein said gateway includes software interface means for changing the address type of the data packets of a said stream, whereby when it is desired to supply a stream to a client, the data packets input to said gateway are switched to a multicast address type for supply to all said clients requesting said stream.

4. Apparatus as claimed in claim 3 wherein means are provided for duplicating said data packets to be supplied to multiple clients by providing a logical multicast loop back, and wherein the time-to-live (TTL) is set to zero.

5. Apparatus as claimed in claim 4 wherein after duplication of said data packets, a second software interface changes the address type of said duplicated data packets from multicast back to unicast prior to output to said clients.

6. Apparatus as claimed in claim 4 wherein after duplication of said data packets, a second software interface changes the address type of said duplicated data packets to a second multicast address prior to output to said clients, wherein said second multicast address corresponds to said clients who are a group within a multicast enabled network.

7. Apparatus for providing streaming data from a server to multiple clients, comprising a plurality of gateways located between said server and said clients, each said client being associated with one said gateway, wherein each said gateway is provided with means for sourcing a data stream from a server or another gateway upon receipt of a first request for a said stream, and means for supplying a second or subsequent client with a data stream already being supplied to a first client, and wherein each said gateway is provided with means for deciding upon receipt of a request from a client for a data stream whether said

gateway can supply the data stream itself and, if not, for deciding whether a neighbouring gateway exists from which said data stream may be obtained.

8. Apparatus as claimed in claim 7 wherein each said gateway includes: a list of all neighbouring gateways, a database listing all the data streams currently being supplied by said neighbouring gateways, and a database of all the streams being supplied by the said gateway.

9. Apparatus as claimed in claim 8 wherein each said gateway reports to each neighbouring said gateway when it starts to supply a new data stream.

10. Apparatus as claimed in claim 8 wherein each said gateway is provided with means for selecting between two or more possible gateways as the source of a data stream requested by a client.

11. Apparatus as claimed in claim 10 wherein said selecting means selects from said possible source gateways by first eliminating possible sources that are at or beyond a maximum loading, and then on the basis of quality of said streams supplied by said possible source gateways, the loading of said possible source gateways, and the communication latency between said possible source gateways and said requesting gateway.

12. Apparatus as claimed in claim 11 wherein each said gateway is provided with means for interrogating a possible source gateway as to said loading, stream quality, and communication latency.

13. Apparatus as claimed in claim 12 wherein after overloaded or maximum loaded possible sources have been eliminated, the quality the streams provided by the possible source gateways is the first criteria in selecting a source gateway, the source gateway loading is the second criteria to be used in the event of equal stream quality, and the communication latency is the final criteria if stream quality and source gateway loading are all equal.

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14. A method of providing streaming data from a server to multiple clients comprising, locating a gateway between said server and said clients, obtaining streaming data from said server upon receipt of a first request for a stream from any of said clients, and providing said stream from said gateway to second and subsequent clients requesting said stream.

15. A method as claimed in claim 14 comprising means for maintaining in said gateway a list of all streams currently being supplied to clients of said gateway, and comparing a request from a client for a stream with said list, and obtaining a requested stream from said server if the requested stream is not on said list and supplying said requested stream to the client from the gateway if the requested stream is on said list.

16. A method as claimed in claim 15 wherein when a stream already being supplied to a first client is to be supplied to a client, the data packet address types of the data packets comprising said stream are switched to multicast address type for supply to all clients requesting said stream.

17. A method as claimed in claim 16 comprising duplicating said data packets by logical multicast looping back and setting the time-to-live to zero.

18. A method as claimed in claim 17 comprising switching the data packet address types of said duplicated data packets to unicast and outputting said duplicated streams to said clients.

19. A method as claimed in claim 17 wherein after duplication the data packet address types of said duplicated data packets are changed to a multicast address corresponding to clients wishing to receive said stream, said clients being a group within a multicast enabled network.

20. A method for providing streaming data from a server to multiple clients, comprising locating a plurality of gateways between said server and said clients, each said client being associated with one said gateway, sourcing a data stream from a server or another gateway in the event that a request for a stream is a first request to a said gateway for a said stream, and supplying a data stream from the

said gateway to a second or subsequent client requesting a data stream in the event that said second or subsequent client is requesting a data stream already being supplied to a first client.

21. A method as claimed in claim 20 wherein when a request is a first request to a gateway for a said data stream the said gateway decides whether a neighbouring gateway exists from which said data stream may be obtained.

22. A method as claimed in claim 20 ~~or 21~~ wherein when a gateway starts to serve a data stream for the first time, said gateway reports to all neighbouring gateways that it is serving this said data stream.

23. A method as claimed in claim 21 wherein a gateway selects between two or more gateways that are possible sources of a requested data stream.

24. A method as claimed in claim 23 wherein prior to selecting between two or more gateways that are possible sources of a said data stream, a gateway interrogates said possible sources about the loading of the possible source gateways, quality of the data stream, and the communication latency between the gateway and the possible source gateways.

25. A method as claimed in claim 24 wherein the selection of a source gateway is made by eliminating overloaded or maximum loaded possible source gateways

and then on the basis firstly of the stream quality, secondly on the basis of source loading in the event that stream quality is the same, and lastly on the basis of communication latency in the event that stream quality and loading are the same.

26. A software interface application in an object-oriented environment comprising means for changing an address type of a data packet from (a) unicast to multicast, or (b) multicast to unicast, or (c) a first multicast address to a second multicast address, or (d) a first unicast address to a second unicast address.

27. A data transmission network comprising a plurality of network domains wherein some of said network domains are unicast domains and the remainder of said domains are multicast domains, said network further comprising a plurality of gateways located at the boundaries and said gateways at least at the boundaries between a unicast domain and a multicast domain being provided with software interface means for changing the address type of a data packet from unicast to multicast or vice versa.

28. A data transmission network comprising a plurality of gateways, each said gateway having a number of associated clients, wherein each said gateway is capable of acting as a source of data content itself and is capable of sourcing data content from another said gateway.